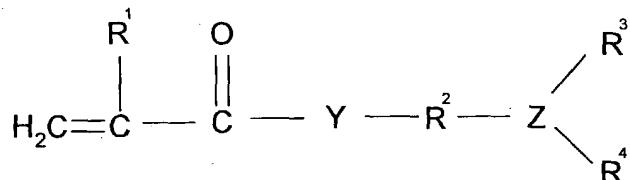


Claims

1. A polymer comprising quaternary ammonium groups and/or quaternary phosphonium groups bound to the backbone of the polymer, said quaternary ammonium groups and/or quaternary phosphonium groups being neutralised by counter-ions, characterised in that the counter-ions consist of the anionic residue of an acid having an aliphatic, aromatic, or alkaryl hydrocarbon group comprising 6 or more carbon atoms.
2. Process for the preparation of a polymer according to claim 1, comprising the steps of:
 - Quaternisation of an amine- or phosphine-functional monomer of formula (I):



15 wherein Y is O or NH, Z is N or P, R¹ is a hydrogen atom or a C₁-C₄ alkyl group, R² is a C₂ or a C₃-C₁₂ alkylene group, R³ and R⁴ independently represent a C₁-C₆ alkylene group or an optionally substituted phenyl group.

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- Replacement of the counter-ion of the quaternised ammonium or phosphonium monomer by a carboxylate group derived from an acid having an aliphatic, aromatic, or alkaryl hydrocarbon group comprising 6 or more carbon atoms.
- Polymerisation of at least one type of long-chain acid-capped quaternary ammonium monomer and/or at least one type of long-chain, acid-capped quaternary phosphonium-functional monomer.

3. Use in anti-fouling coating compositions of a polymer comprising quaternary ammonium and/or quaternary phosphonium groups bound to the backbone of the polymer, said quaternary ammonium groups and/or quaternary phosphonium groups being neutralised by counter-ions, characterised in that the counter-ions consist of the anionic residue of an acid having an aliphatic, aromatic, or alkaryl hydrocarbon group comprising 6 or more carbon atoms.
4. Anti-fouling coating compositions comprising an ingredient having marine biocidal properties and a polymer comprising quaternary ammonium and/or quaternary phosphonium groups bound to the backbone of the polymer, said quaternary ammonium groups and/or quaternary phosphonium groups being neutralised by counter-ions, characterised in that the counter-ions consist of the anionic residue of an acid having an aliphatic, aromatic, or alkaryl hydrocarbon group comprising 6 or more carbon atoms.
5. Coating composition according to claim 4, characterised in that the counter-ions comprise 6 to 50 carbon atoms.
6. Coating composition according to claim 4 or 5, characterised in that the coating composition additionally comprises a rosin material.
7. Coating composition according to claim 6, characterised in that the coating composition has a binder comprising a blend of a rosin material and an auxiliary film-forming resin in a weight ratio of 20:80 to 95:5, the auxiliary film-forming resin comprising 20-100% by weight of a quaternary ammonium- and/or quaternary phosphonium-functional film-forming polymer (A), the quaternised groups of which are blocked by groups capable of hydrolysing, dissociating or exchanging with seawater species to leave a polymer soluble in seawater, the blocking groups being anionic

residues of acids having an aliphatic, aromatic, or alkaryl hydrocarbon group comprising 6 or more carbon atoms, and 80-20% of a non-hydrolysing, water-insoluble film-forming polymer (B).

- 5 8. Coating composition according to claim 7, characterised in that the binder comprises a blend of the rosin material and the auxiliary film-forming resin in a weight ratio of 55:45 to 80:20.
- 10 9. Coating composition according to claim 7 or 8, characterised in that the auxiliary film-forming resin comprises 30-90% by weight of the film-forming polymer (A) capable of hydrolysing or dissociating to a polymer soluble in sea water and 70-10% by weight of the non-hydrolysing, water-insoluble film-forming polymer (B).
- 15 10. Coating composition according to any one of claims 4 to 9, characterised in that the non-hydrolysing, water-insoluble film-forming polymer (B) is an acrylate ester polymer or a vinyl ether polymer.
- 20 11. Coating composition according to any one of claims 4 to 10, characterised in that the binder includes a non-polymeric plasticiser present at up to 50% by weight based on the total binder polymer.
- 25 12. Use of a coating composition according to any one of claims 4 to 11 for protection of man-made structures immersed in water such as boat hulls, buoys, drilling platforms, oil production rigs, and pipes.